

REMARKS

This Amendment is responsive to the Office Action mailed June 30, 2005 ("Office Action").

Election

Applicants affirm the election of Group 1, claims 1-30, for examination in the captioned application. Non-elected claims 31-46 have been cancelled without prejudice.

Claims Amendments

Claims 1 and 2 have been cancelled without prejudice.

Claims 3-6 have been amended to correct their dependency.

Claim 8 has been re-written in independent form by incorporating the limitations of claim 1. Support for the amendment can be found in original claim 1 and in the specification. No new matter is introduced by this amendment nor does the amendment constitute a narrowing of original claim 8.

Claims 14-16 and 18 have been amended to correct their dependency.

Claim 17 has been cancelled without prejudice.

Claim 19 has been re-written in independent form by incorporating the limitations of claim 17 and has been further amended to recite that the fourth module comprises a feed nozzle for introducing water to the gas stream. Support for the amendment can be found in original claim 17 and in the specification. Support for the feed nozzle element can be found in the specification on page 11, lines 27-29, and as illustrated in Fig. 2. No new matter is introduced by this amendment.

Claims 20 and 25-26 have been amended to correct their dependency.

Claims 29-46 have been cancelled without prejudice.

Claim Rejections – 35 U.S.C. §112, second paragraph

Claim 16 has been amended to correct its dependency and to overcome this rejection.

Claim Rejections – 35 U.S.C. §102(b) and (e)

Claims 1-2 and 8-9 stand rejected under §102(e) as being anticipated by Han et al. (U.S. Patent No. 6,896,709) ("Han").

Claims 1 and 2 have been cancelled without prejudice. Claim 8 and the claims depending therefrom are believed to be in condition for allowance as Han fails to anticipate an apparatus comprising a plurality of modules stacked end to end along a common axis that includes a first module having a partial oxidation catalyst within the processing core of that module. It has been suggested that Han teaches a reactor wherein the plurality of modules includes a first module containing partial oxidation catalyst (5). However, it should be noted that as shown and described in Han, combustion catalyst (5) is contained within combustion chamber (9), which is described as the annular space between inner housing (8) and outer shell (10). See Figures 3, 5 and 6 and col. 5, lines 26-32. As such, Han does not teach a combustion catalyst within one of a plurality of modules that are stacked end-to-end. Moreover, it should also be noted that the reactor disclosed in Han is a steam reforming reactor, and as a result, does not teach the use of a combustion catalyst within any of its reforming modules, described as hydrogen separation cells (4).

Claim 9 is not believed to be anticipated by Han as there is no teaching in the reference that any of the reforming modules, described as hydrogen separation cells (4), will comprise both a partial oxidation catalyst and a steam reforming catalyst. As discussed above, combustion catalyst (5) of Han is only present within combustion chamber (9) that surrounds the plurality of hydrogen separation cells (4). Hydrogen separation cells (4), which contain the steam reforming catalyst, are separate and isolated from combustion chamber (9).

Claims 8 and 9 and the claims depending therefrom are not believed to be anticipated by Han.

Claims 1 and 17-19 stand rejected under §102(b) as being anticipated by Abe et al. (U.S. Patent No. 6,576,203) ("Abe").

Claims 1 and 17 have been cancelled without prejudice. Claim 19, now in independent form, recites that one of the plurality of modules has a processing core that includes an inert material for mixing components of the gas stream passing therethrough and that the module has a feed nozzle for introducing water to the gas stream. Abe does not anticipate a reactor having a plurality of modules stacked end-to-end wherein one of the modules comprises an inert material for mixing the components of the gas stream passing through the module and a feed nozzle for introducing water to the gas stream. While Abe teaches the use of an inert catalyst support in catalyst units (61) and (62), the use of an inert material separate and apart from a catalyst is not taught for any purpose in the reference.

For these reasons, claims 18 and 19 are not believed to be anticipated by Abe.

Claim Rejections – 35 U.S.C. §103(a)

Claim 3 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Han as applied to claim 1, and further in view of Nishida et al. (U.S. Patent No. 5,387,399) (“Nishida”). Claim 3 has been amended to depend from claim 8, and thus, is believed to be in condition for allowance.

Claims 5-7 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Han as applied to claim 1, and further in view of Skala et al. (U.S. Patent No. 6,238,815) (“Skala”). Claims 5-7 have been amended to depend directly or indirectly from claim 8, and thus, are believed to be in condition for allowance.

Claims 10-13 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Han as applied to claims 1, 8 and 9, and further in view of Clawson et al. (U.S. Patent No. 6,126,908) (“Clawson ‘908”). Claims 10-13 are believed to be in condition for allowance by virtue of their dependency from claim 8.

Claim 15 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Han as applied to claim 1, and further in view of Clawson et al. (U.S. Patent No. 6,468,480) ("Clawson '480"). Claim 15 has been amended to depend from claim 8, and thus, is believed to be in condition for allowance.

Claims 4, 14, 20, 25, 26 and 27 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Han as applied to claim 1, and further in view of Gonjo et al. (U.S. Patent No. 6,159,434) ("Gonjo"). As amended, claims 4, 14, 20, 25, 26 and 27 all depend directly or indirectly from claim 8, and thus, are believed to be in condition for allowance.

Claims 16 and 21-24 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Han as applied to claim 1, and in view of Gonjo as applied to claims 14 and 20, and further in view of Clawson '480. As amended, claims 16 and 21-24 each depend directly or indirectly from claim 8, and thus, are believed to be in condition for allowance.

Claim 28 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Han in view of Gonjo, as applied to claim 26, and further in view of Dandekar et al. (U.S. Patent No. 6,180,846 B1). Claim 28 depends indirectly from claim 8, and thus, is believed to be in condition for allowance.

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All of the stated grounds of objection and rejection are believed to have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider all presently outstanding objections and rejections and that they be withdrawn. Applicants believe that a full and complete response has been made to the outstanding Office Action and, as such, the present application is in condition for allowance. If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

Prompt and favorable consideration of this Amendment is respectfully requested.

Respectfully submitted,



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